

60,137-163  
115-3189-U

AMENDMENT

1. (PREVIOUSLY AMENDED) A process of depositing a multi layer coating on at least a portion of an article surface comprising:
- depositing by electroplating at least one metal or metal alloy containing layer on at least a portion of said article surface;
- subjecting said article surface having said at least one electroplated layer thereon to pulses of air to dry and clean said electroplated article surface; and
- depositing by physical vapor deposition on at least a portion of said dry and clean electroplated layer at least one layer comprising a material selected from the group consisting of refractory metal, refractory metal alloy, refractory metal compound, and refractory metal alloy compound on at least a portion of said electroplated layer, wherein said refractory metal compound is selected from the group consisting of nitrides, carbides, carbonitrides, oxides and reaction products of said refractory metal, oxygen and nitrogen, and wherein said refractory metal alloy compound is selected from the group consisting of nitrides, carbides, carbonitrides, oxides and reaction products of said refractory metal alloy, oxygen and nitrogen.
2. (PREVIOUSLY AMENDED) The process of claim 1 wherein said electroplating comprises electroplating at least one layer comprising a material selected from copper, nickel and chrome on at least a portion of said article surface.
3. (CANCELLED)
4. (PREVIOUSLY AMENDED) The process of claim 2 wherein said refractory metal is selected from zirconium and titanium and said refractory metal alloy is zirconium-titanium alloy.
5. (PREVIOUSLY AMENDED) The process of claim 4 wherein said refractory metal is zirconium and said refractory metal alloy is zirconium-titanium alloy.
6. (CANCELLED)

60,137-163  
115-3189-U

7. (PREVIOUSLY AMENDED) The process of claim 1 wherein said refractory metal compound is selected from nitrides, oxides and reaction products of refractory metal, oxygen and nitrogen, and said refractory metal alloy compound is selected from nitrides, oxides and reaction products of refractory metal alloy, oxygen and nitrogen.

8. (PREVIOUSLY AMENDED) The process of claim 7 wherein said refractory metal compound is selected from zirconium nitride, zirconium oxide, reaction products of zirconium, oxygen and nitrogen, titanium nitride, titanium oxide and reaction products of titanium, oxygen and nitrogen, and said refractory metal alloy compound is selected from zirconium-titanium alloy nitride, zirconium-titanium alloy oxide and reaction products of zirconium-titanium alloy, oxygen and nitrogen.

9. (PREVIOUSLY AMENDED) The process of claim 8 wherein said refractory metal compound is selected from zirconium oxide, zirconium nitride and reaction products of zirconium, oxygen and nitrogen, and said refractory metal alloy compound is selected from zirconium-titanium alloy nitride, zirconium-titanium alloy oxide and reaction products of zirconium-titanium alloy, oxygen and nitrogen.

10. (PREVIOUSLY AMENDED) The process of claim 1 wherein said electroplating comprises electroplating at least one layer comprised of copper on said at least a portion of the surface of said article to provide at least one electroplated copper layer, electroplating at least one layer comprised of nickel on said at least one electroplated copper layer to provide at least one electroplated nickel layer, and electroplating at least one layer comprised of chrome directly on said at least one electroplated nickel layer.

11. (PREVIOUSLY AMENDED) The process of claim 10 wherein said at least one layer selected from refractory metal and refractory metal alloy is deposited by physical vapor deposition on at least a portion of said electroplated chrome layer.

60,137-163  
115-3189-U

12. (PREVIOUSLY AMENDED) The process of claim 11 wherein said refractory metal is selected from zirconium and titanium and wherein said refractory metal alloy is zirconium-titanium alloy.

13. (PREVIOUSLY AMENDED) The process of claim 12 wherein said refractory metal is zirconium and said refractory metal alloy is zirconium-titanium alloy.

14. (PREVIOUSLY AMENDED) The process of claim 13 wherein a sandwich coating comprised of alternating layers of zirconium or zirconium-titanium alloy, and zirconium nitride or zirconium-titanium alloy nitride is deposited by physical vapor deposition over said zirconium or zirconium-titanium alloy layer.

15. (PREVIOUSLY AMENDED) The process of claim 14 wherein a zirconium nitride or zirconium-titanium alloy nitride layer is deposited by physical vapor deposition over said sandwich layer.

16. (PREVIOUSLY AMENDED) The process of claim 15 wherein a zirconium oxide or zirconium-titanium oxide layer is deposited by physical vapor deposition over said zirconium nitride layer or zirconium-titanium alloy nitride layer.

17. (PREVIOUSLY AMENDED) The process of claim 15 wherein a layer comprised of the reaction products of zirconium or zirconium-titanium alloy, oxygen and nitrogen is deposited by physical vapor deposition over said zirconium nitride layer of said zirconium-titanium alloy nitride layer.

18. (PREVIOUSLY AMENDED) The process of claim 13 wherein a layer comprised of zirconium nitride or zirconium-titanium alloy nitride is deposited by physical vapor deposition over said zirconium or zirconium-titanium alloy layer.

60,137-163  
115-3189-U

19. (PREVIOUSLY AMENDED) The process of claim 18 wherein a layer comprised of zirconium oxide or zirconium-titanium alloy oxide is deposited by physical vapor deposition over said zirconium nitride or zirconium-titanium nitride alloy layer.

20. (PREVIOUSLY AMENDED) The process of claim 18 wherein a layer comprised of the reaction products of zirconium or zirconium-titanium alloy layer, oxygen and nitrogen is deposited by physical vapor deposition over said zirconium nitride or zirconium-titanium alloy nitride layer.

21. (PREVIOUSLY AMENDED) The process of claim 1 wherein said electroplating comprises electroplating at least one layer selected from nickel and chrome on said at least a portion of said article surface.

22. (PREVIOUSLY AMENDED) The process of claim 21 wherein said at least one layer selected from refractory metal, refractory metal alloy, refractory metal compound and refractory metal alloy compound is deposited by physical vapor deposition on said at least a portion of said at least one electroplated layer.

23. (PREVIOUSLY AMENDED) The process of claim 22 wherein said refractory metal is selected from zirconium and titanium, and said refractory metal alloy is zirconium-titanium alloy.

24. (PREVIOUSLY AMENDED) The process of claim 23 wherein said refractory metal is zirconium and said refractory metal alloy is zirconium-titanium alloy.

25. (CANCELLED)

26. (PREVIOUSLY AMENDED) The process of claim 22 wherein said refractory metal compound is selected from nitrides, oxides and reaction products of refractory metal, oxygen and nitrogen, and wherein said refractory metal alloy compound is selected from nitrides, oxides and reaction products of refractory metal alloy, oxygen and nitrogen.

60,137-163  
115-3189-U

27. (PREVIOUSLY AMENDED) The process of claim 26 wherein said refractory metal compound is selected from zirconium nitride, zirconium oxide, reaction products of zirconium, oxygen and nitrogen, titanium nitride, titanium oxide, reaction products of titanium, oxygen and nitrogen, and wherein said refractory metal alloy compound is selected from zirconium-titanium alloy nitride, zirconium-titanium alloy oxide, and reaction products of zirconium-titanium alloy, oxygen and nitrogen.

28. (PREVIOUSLY AMENDED) The process of claim 27 wherein said refractory metal compound is selected from zirconium oxide, zirconium nitride and reaction products of zirconium, oxygen and nitrogen, and wherein said refractory metal alloy compound is selected from zirconium-titanium alloy nitride, zirconium-titanium alloy oxide, and reaction products of zirconium-titanium alloy, oxygen and nitrogen.

29. (PREVIOUSLY AMENDED) The process of claim 1 wherein said electroplating comprises electroplating at least one layer comprised of nickel on at least said portion of the surface of said article to provide at least one electroplated nickel layer, and electroplating at least one layer comprised of chrome directly on said at least one electroplated nickel layer to provide at least one electroplated chrome layer.

30. (PREVIOUSLY AMENDED) The process of claim 29 wherein at least one layer selected from refractory metal and refractory metal alloy is deposited by physical vapor deposition on at least a portion of said electroplated chrome layer.

31. (PREVIOUSLY AMENDED) The process of claim 30 wherein said refractory metal is selected from zirconium and titanium, and wherein said refractory metal alloy is zirconium-titanium alloy.

32. (PREVIOUSLY AMENDED) The process of claim 31 wherein said refractory metal is zirconium, and wherein said refractory metal alloy is zirconium-titanium alloy.

60,137-163  
115-3189-U

33. (PREVIOUSLY AMENDED) The process of claim 32 wherein a sandwich coating comprised of layers comprised of zirconium or zirconium-titanium alloy alternating with layers comprised of zirconium nitride or zirconium-titanium alloy nitride is deposited by physical vapor deposition over said zirconium or zirconium-titanium alloy layer.

34. (PREVIOUSLY AMENDED) The process of claim 33 wherein a zirconium nitride or zirconium-titanium alloy nitride layer is deposited by physical vapor deposition over said sandwich layer.

35. (PREVIOUSLY AMENDED) The process of claim 34 wherein a zirconium oxide or zirconium-titanium oxide layer is deposited by physical vapor deposition over said zirconium nitride or zirconium-titanium alloy nitride layer.

36. (PREVIOUSLY AMENDED) The process of claim 34 wherein a layer comprised of the reaction products of zirconium or zirconium-titanium alloy, oxygen and nitrogen is deposited by physical vapor deposition over said zirconium nitride or zirconium-titanium alloy nitride layer.

37-64. (CANCELLED)

65. (CURRENTLY AMENDED) The process of claim 64-L wherein ~~the step of drying said article surface occurs said drying period is~~ between 2 minutes and 5 minutes.

66. (CURRENTLY AMENDED) The process of claim 64-L wherein ~~the step of~~ subjecting said article surface to pulses of air atomizes water droplets on said article surface.

67. (CURRENTLY AMENDED) The process of claim 64-L wherein one pulse of air is generated for a square centimeter of said article surface.